

Multi-Faceted Learning Environments:  
A Study of Preschool Development

A Senior Honors Thesis

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By: Megan Servick

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Project Advisers:  
Stephen A. Petrill, Professor, Department of Human Development and Family Science  
Laura Justice, Professor, Department of Teaching and Learning

A solid educational foundation serves to promote social, emotional, physical and cognitive skills that prove invaluable in a modern, industrialized society. The United States Department of Labor: Bureau of Labor Statistics found that the unemployment rates were more than double for citizens with a high school diploma versus those with a bachelor's degree and nearly 3.5 times greater for citizens who do not complete high school (US Department of Labor: Bureau of Labor Statistics, 2007). In terms of income, such a range of educational attainment correlated with average wage differences of \$27, 456 per year for citizens 25 years of age and older (Morgan & David, 2006).

While formal, state mandated education begins at six years old and includes kindergarten enrollment, critical developmental stages start at birth (United States Department of Education: Compulsory School Attendance table, 2000). However, an increase in the overall trend from single-income to dual-income families indicates a reduction in school preparation from stay-at-home parents (Progressive Policy Institute, 2004). From 1950 to 1998, the average percent of women in the workforce increased 26.9%, from 32% to 58.9% for all women at least 16 years of age (Fullerton, 1999). In The Monthly Labor Review, Fullerton (1999) used workforce trends to predict that the percent of women who make up the overall workforce will increase by 1.7% by 2015. Due to this increase of women working outside of the home and the projection that the trend will persist, the importance of quality preschool programs is paramount.

The effects of a strong preschool education not only predict kindergarten readiness, but also set children along the path for positive social and health-related behaviors. Students who attend a curriculum-based preschool, as opposed to non-academic childcare centers, demonstrate significantly higher long-term academic and social outcomes than their peers who do not (Barnett, 1995; Gomby et al., 1995; Mead, 2004; Peisner-Feinberg, 2001; Yoshikawa, 1995).

Peisner-Feinberg et. al. (2001) described the long-term impact of quality pre-kindergarten programs as beneficial to the students' cognitive and socio-emotional development during elementary school. Further, as shown in an evaluation of a vast number of independent studies of preschool effects (Gomby et. al., 1995), a quality preschool education can provide children with the tools necessary to follow a path toward higher education, to avoid delinquent activities and to earn a higher wage than their peers without this experience. Thus, the individual and societal benefits from improving preschool quality and availability prove significant (Bower, 1985; Desimone et. al., 2004; Espinosa, 2002;. Frede, 2005)

In light of such findings, state agencies have been working with the United States Department of Education to enhance preschool learning (U.S. Department of Education: Good Start, Grow Smart, 2002). Frede's (2005) analysis of preschool education suggested a need to improve preschool quality and emphasized reducing teacher to student ratios, increasing curriculum-based activities and supporting teacher development. In 2003, the State of Ohio acknowledged these needs and initiated Step up to Quality (SUTQ) as a voluntary program setting important benchmarks in child-staff ratio, staff education and qualifications, specialized training, administrative practices and early learning experiences/curriculum (Ohio Department of Job and Family Services, 2006). Ohio joins 20 other states that have implemented strategies for system-wide preschool improvements (National Child Care Information Center, 2004). For instance, efforts focusing on increasing teacher qualifications came to fruition in New Jersey's *Abbott* districts after the Supreme Court mandated preschool reform as a result of *Abbott vs. Burke* (1998, 2000) (Ryan & Ackerman, 2004). Such standards contributing to preschool quality exist as both identifiers of the overall program merit and as indicators of the makeup of individual classrooms.

Within the classroom, teacher quality affects preschooler development and varies as a result of qualifications, education and classroom practices. The strategies and behaviors that teachers exhibit reflect their attitudes about teaching and learning and create diverse experiences for children that tend to produce differing academic and behavioral outcomes (Bourke, 1986; Campbell, 1992; Dornbusch et. al., 1987; Pettit, Bates & Dodge, 1997; Williams, 1996).

Williams (1996) examined teacher attitudes and concluded that “success in schools may well depend on teachers’ philosophical views and attitudes toward instruction” (p. 21). Schaefer (1991) further found that as adults’ educational attainment increased their beliefs about child behavior shifted from strict obedience to gradual independence. These differences in methodologies about children frequently exist on a continuum from traditional authoritarian to progressive (Schaefer, 1981; Schaefer & Bell, 1958). In this context, traditional authoritarian teaching aims to instill information directly with special attention to behavior while the goal of progressive education is to teach children through playfulness and exploration (Boaler, 1998; Schaefer, 1991; Zilversmit, 1993; Jervis & Montag, 1991; Hayes, 2006). Proponents of progressive education stress the method as critical for life-long growth and learning as opposed to the short-term direct learning and memorization common to traditional education (Bensman, 1994; Boaler, 1998; Hafner, 1993). Central Park East elementary school, a progressive education school developed in 1974 in Harlem and still active (along with its sister school CPE II), reported lower academic scores than neighboring schools. In an assessment of the long-term effects of this school, however, Bensman (1994) found significantly higher high school graduation rates in former CPE students than graduates of other New York City elementary schools, and indicated the developmental impact of progressive education. Other researchers (Ackerman, 2003; Doll, 1983; Williams, 1996) further suggested that incorporating aspects of

both traditional and progressive attitudes into learning may best meet the needs of all students, but they did not empirically assess the academic outcomes of teaching methodologies. This conflicting research, then, indicates variations in the effectiveness of teaching styles dependent on other factors. While educators influence the activities within their classrooms and often have an impact that stems beyond the centers' doors, they only spend a minority of the day with the preschoolers. Educators must understand the many influences in a child's life and work with parents to promote learning both within and outside of the classroom.

Parents who reinforce or introduce concepts related to growth and development provide additional support that further propels learning and academic success (Clark, 2007; Comer & Haynes, 1991; Williams, 1996; Wolf, 1982). Comer and Haynes (1991) described effective education as the ability of families to both successfully prepare students to function well in school and to work with the school to increase the child's development. Thus, one feature of the achievement gap intimately linked to preschool quality and effectiveness is parental involvement. As part of the academic goals it set in 1995, the United States Department of Education recognized this important adult role by emphasizing the need for parents to act as a child's first teacher and for schools and families to form an educational partnership (U.S. Department of Education: Teachers and Goals, 1995). As separate entities, then, teachers and parents can make a great impact on the growth of children. Moreover, their combined efforts can serve to better advance the long-term physical, intellectual and social growth that students acquire from a quality preschool experience (West, 1993; Drummond & Stipek, 2004; Yoshikawa, 1995; Clark, 2007).

Unfortunately, Hoover-Dempsey, Bassler, Brissie (1987) found that parental involvement, as measured by parent attendance at conferences, home tutoring, completion of home

instructional tasks and volunteering, was significantly impacted by socioeconomic status.

Among other reasons, financial situations that limit parents' free time and a lack of confidence in their ability to make a worthwhile contribution reduce the amount of parental involvement to children with low SES. This smaller participation rate of low SES parents often combines with poor program availability to more adversely affect child outcome (Drummond & Stipek, 2004; Lareau, 1987; Hoover-Dempsey et. al., 1987). Currently, preschools serve nearly 60% of children less than 6 years old, but only 47% of poor families (National Center for Educational Statistics, 2007). Even in light of the reduced cost or free programs offered to some students, the effects of both program quality and parental involvement still contribute to a preparation gap among socioeconomically distinct groups of students (Mead, 2004; Rimm-Kaufman, Pianta & Cox, 2000; Coley, 2002). Specifically, scores on tests of reading and mathematics abilities differ by up to 46% between the wealthiest 20% and poorest 20% of students entering kindergarten (Coley, 2002). Barnett (1995) estimates that failure to provide these low SES children with two years of quality preschool will have long-term costs to society of 400 billion dollars due to such factors as later welfare dependency and delinquency.

Preschool rating scales recognize characteristics such as child-staff ratios, staff education, specialized training, administrative practices and curriculum development as important to child outcome, but fail to consider these aspects within the context of a child's learning environment. Current research also indicates the importance of parental involvement and structure as important to child outcome. However, this research fails to examine how variations in family demographics might impact home order and preschooler development and which characteristics have the greatest impact. Limitations of earlier studies also include small, unrepresentative sample sizes that limit comparison among various economic groups. In this

pilot study, we will begin to examine the effects of family structure and income, home environment, and parents' workweeks on preschoolers' language and cognitive outcomes. We will also examine how teachers' backgrounds influence their ideas about children. In particular, we will determine how age, professional experience working with preschool children, experience as a lead/senior teacher, and educational attainment impact the teachers' instructional attitudes in terms of their progressive or traditional characteristics.

## Method

### *Participants:*

The Ohio Survey of Early Childhood is a 2-year longitudinal study examining the quality of certified childcare programs in Ohio and their relationship to child outcomes. A total sample of 16,700 is drawn from children, between the ages of three and five, as well as their parents, teachers, and program directors in Ohio child care facilities that have implemented the State of Ohio's "Step up to Quality" program. This evaluation will utilize a multilevel framework that considers children as nested within classrooms that are nested within programs and communities across various regions of the state.

The ongoing project includes two complementary activities. The first activity involves large scale screening of all programs voluntarily participating in the "Step Up to Quality" program. As a result, over 300 program directors will be screened via questionnaires over a two-year period. Two classrooms will be randomly selected from each of these programs so that more than 600 teachers will complete questionnaires. All parents in these classrooms will also be asked to complete questionnaires on their children for a maximum response rate of 15,000 children. The second activity consists of an in-depth analysis of children's language, academic

and social abilities. A total of 40 classrooms will be randomly selected from the larger pool for in-depth analysis; from each of these 40 classrooms, 5 children will be randomly selected for direct observation and assessment, for a total child sample of 200 children.

In the current study, we examined a pilot sample of parent and teacher questionnaire results reported ahead of the final sample (n=15,000). The parent sample (n=101) consists mainly of females (96%), as does the teacher sample (n=40, female=98%). The majority of these parents' preschool children are male (53.5%) and White, non-Hispanic (White, non-Hispanic=64.4%; White, Hispanic=7.9%; Black, non-Hispanic=28.7%; American Indian or Alaskan Native=1%; Asian=5%; Native Hawaiian or Pacific Islander=1%; Other=3%).

### *Procedures and Measures*

For the large-scale screening, directors of participating programs received a packet including an initial contact letter, a program director consent form, and a questionnaire to complete and return via US mail to project staff. Two classrooms/teachers were randomly selected for participation in the screening component of this project. Each of these teachers received an initial contact letter, a teacher consent form, and a questionnaire to complete and return via US mail to project staff. The children in each of these classrooms received a packet for their parents, which included an initial contact letter explaining the project, a consent form and a questionnaire to complete. As participants return questionnaires, the research staff enters qualitative data into the study database. All other fields are then scanned into the same database. Activity two includes collecting data through direct observations and assessments regarding classroom and child characteristics. These measures are part of the ongoing project and are included below, but will not be used in the current study.



As shown in Table 1, the following measures will be collected from program directors, teachers, and parents. These are described below:

**Program Director/Administrator Questionnaire:** The purpose of these measures is to describe the centers' overall program quality. Adapted from the standard tool used by Early Childhood Longitudinal Study-B Preschool (2005), this questionnaire includes questions about the teacher and student demographics, the program structure, parental involvement and the director's background and beliefs about caring for children. This pilot study will not include program director responses.

**Teacher Questionnaire:** These questionnaires serve to reveal the educator's demographic information and beliefs about child development and teaching. More specifically, this adaptation from the NCEDL Study examines pre-kindergarten teachers in terms of their education, training, priorities and methodology. As a measure of progressive and traditional methods, the NCEDL study implements Schaefer and Edgerton's (1981) modernity scale. Teachers indicate their level of agreement with each of a series of 16 questions pertaining to traditional or progressive ideas (i.e., "Children should always obey the teacher"). Lastly, teachers indicate how often per week they engage in teaching each of 27 different activities from the Early Learning Content Standards of the Ohio Department of Education (2006).

**Parent Questionnaire:** Adapted from the Early Childhood Longitudinal Study-B Preschool (2005) and the School Readiness to Learn instruments (Oxford Center for Child Studies, 2005), the purpose of these measurements is to illustrate the preschoolers' family structure, environment and development. The questionnaire studies general household information, parent background and education, the home environment and the preschooler's early development. The early

development of the child is broken into four domains: social relationships, language and cognitive skills, social and emotional development and special challenges. Parents indicate their preschool student's understanding of 66 skills identified by the Ohio Department of Education (2006). Additionally, social relationships are measured using 16 yes/no questions from the CHAT and CAST (Baron-Cohen, et al., 1992, 2000) tests for autism.

Table 1: Project Measurement Table

Measure	Timeline	Construct	Psychometric Qualities
<b>ACTIVITY 1: SCREENING</b>			
<b>Duration:</b> Each questionnaire completed by the program director, teacher and parent will take approximately 20 minutes to fill-out			
Preschool Center/Program Director Questionnaire	Fall	Program demographics, structure, staff, background	Adapted from standard tool used by Early Childhood Longitudinal Study-B Preschool (2005)
Teacher Questionnaire	Fall	Professional Demographics, Ideas about Raising Children, Self-Efficacy, Instructional Practices	Adapted from standard tool used by NCEdL Multi-State Pre-Kindergarten Study (2001)
Parent Questionnaire	Fall and Spring	Personal Demographics, Your Neighborhood, Child's health, Reading at Home, Child's Behavior, Child's Language and Cognitive Development, etc.	Adapted from standard tool used by Early Childhood Longitudinal Study-B Preschool (2005) and The Oxford Center for Child Studies, (2005)
<b>ACTIVITY 2: IN-DEPTH ANALYSIS: CLASSROOM</b>			
<b>Duration:</b> The classroom observation will take approximately 2 hours and includes all of the following measures.			
Early Language and Literacy Classroom Environment (ELLCO; Smith & Dickinson, 2002)	Spring	Language and literacy structural supports	Inter-rater reliability = .88; Internal consistency coefficient (Cronbach's alpha) = .84;
Classroom Assessment Scoring System: PreK (CLASS; Pianta, LaParo, & Hamre, 2006)	Spring	Classroom quality Instructional support, emotional support, classroom management	Inter-rater reliability (within 1) = .78- .93; Stability coefficient (test/retest) = .84 - .91; Internal consistency coefficient (Cronbach's alpha) for subscales across studies = .76 to .94; Concurrent validity with ECERS across subscales= .45 - .63
Systematic Assessment of Book Reading (Justice, Zucker, & Sofka, 2007)	Spring	Quality of adult-child storybook reading sessions (large-group or one-on-one)	Inter-rater reliability > .90 (for trained coders)
<b>ACTIVITY 2: IN-DEPTH ANALYSIS: CHILD</b>			
<b>Duration:</b> Each child will be directly assessed for approximately 30 minutes. These 30 minutes includes administration of all of the following measures.			
Phonological Awareness Literacy Screening- Preschool (PALS-PreK;	Spring	Pre-reading skills (alphabet knowledge, name writing)	Inter-rater reliability = .99; internal consistency coefficient (split-half) = .71 - .94; internal consistency

Measure	Timeline	Construct	Psychometric Qualities
Invernizzi, Meier & Sullivan, 2004)			coefficient (Cronbach's alpha) = .77 - .93
Preschool Word and Print Awareness (PWPA; Justice & Ezell, 2001)	Spring	Pre-reading skills (print concepts)	Inter-rater reliability (point-by-point) = .94; Partial credit model (PCM) Infit mean-square for items = .7- 1.3 (acceptable is .6 – 1.4); PCM reliability measure = .74
Clinical Evaluation of Language Fundamentals-2: Preschool (Wiig, Secord, & Semel, 2004)	Spring	Expressive and receptive language (word structure, sentence structure, vocabulary)	Stability coefficient (test/retest) = .77 - .91; internal consistency coefficient (split-half) = .80 - .97; internal consistency coefficient (Cronbach's alpha) = .77 - .95
Comprehensive Test of Phonological Awareness (Wagner, Torgeson, Rashotte, 1999):	Spring	Rapid Automatic Naming	Internal consistency or alternate forms reliability coefficients (content sampling) > .80; Test/retest (time sampling) coefficients = .70 - .92
Test of Early Math Ability-3 (Ginsburg & Baroody, 2001)	Spring	Numbering skills, numeral literacy, mastery of numbers	Internal consistency reliabilities = >.92
Individual Growth and Development Indicators/Get It, Got It, Go! (Early Childhood Research Institute on Measuring Growth and Development, 2002)	Spring	Rhyming	Stability coefficient (test/retest) = .83 -.89
Teacher Report Form (Achenbach, 1991)	Spring	School performance, internalizing and externalizing behavior	Stability coefficient (test/retest) = .90; internal consistency coefficient (Cronbach's alpha) = .90 -.96

Using correlations and T-tests, this pilot study will examine the relationships among parent demographics, the home environment and child outcome, and teacher background and beliefs.

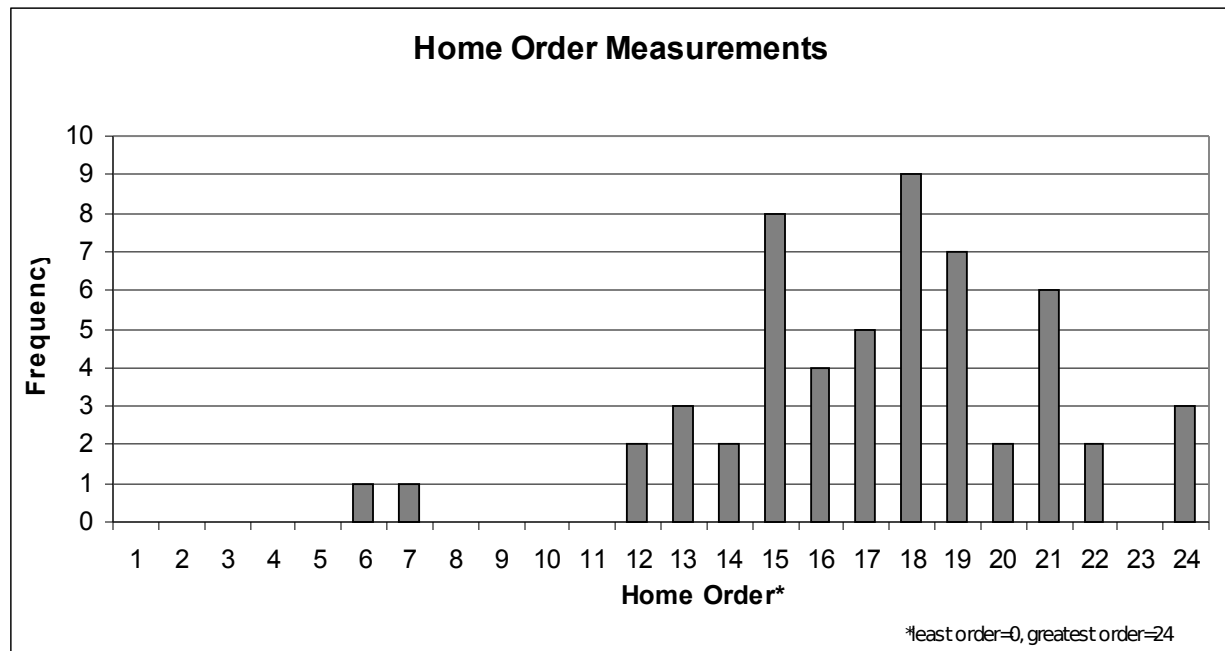
## Results

In this pilot study, we first examined the demographic data of preschool parents and students (n=101) and its relationship to home order and student outcome. Next, we studied the demographic data and experiences of preschool teachers (n=40) and their correlation to their methodological ideas.

Of the parents who completed the questionnaires, 54.2% of the females and half of the males work a standard, traditional workweek. Additionally, the majority of respondents (68.8%) have a spouse/partner living in their home and this adult typically works a traditional, standard workweek (77.8%). The families' incomes range from \$0 to \$90,000+, with a mean of \$40,001-\$50,000,  $SD=3.62$  (where each deviation is \$10,000, with the exception of \$10,000-\$20,000 being split evenly into two income choices).

Measures of home order (Table 2) range from 0 to 24, where a score of 0 indicates the least order and 24 indicates the most order. Families report a mean order level of 17.22 ( $SD=2.55$ ). The order levels in the preschoolers' home environments are marginally positively correlated to family incomes ( $r=.265$ ,  $p=.060$ ) and to a mother's participation in a standard workweek with traditional hours ( $t=1.799$ ,  $p=.078$ ). The mean order level is also greater (+.75 points) for families with a spouse/partner in the house, though this correlation is nonsignificant ( $t=.732$ ,  $p=.467$ ). However, if the spouse/partner works a standard workweek with traditional hours, the mean level of home order is significantly higher ( $t=2.769$ ,  $p<.01$ ).

Table 2:



Examining the relationship between home order and child outcomes, we see small, nonsignificant correlations to parent demographics and home environment. The level of home order positively correlates to language and cognitive skills but shows minimal significance ( $r=.039$ ,  $p=.834$ ). A mother's participation in a traditional workweek is also nonsignificant ( $p=.41$ ), but has a negative correlation ( $t=.831$ ) to child outcome. While a father's workweek significantly correlates to home order, neither home order ( $r=.039$ ,  $p=.834$ ) nor this workweek ( $r=-.537$ ,  $p=.594$ ) significantly correlate to the preschooler's language and cognitive skills. Finally, as family income increases we see a small, but nonsignificant increase in language and cognitive skills ( $r=.230$ ,  $p=.113$ ).

Outside of the home environment, a child's interactions within a preschool setting have the potential to impact his or her development. While influences exist on many levels, a constant presence in the child's educational environment is the teacher. In this pilot study, the teacher sample ( $n=40$ ) consists predominantly of teachers with either an associate or bachelor's degree (55%). Though nearly half (48.6%) of the teachers from the sample have 3 or less years

experiences as a lead teacher, Table 3 displays these teachers' wide range of professional experience working with children (mean=7.84 years; SD=6.78). This variety also exists in the degree to which each teacher holds traditional teaching ideas (table 4).

Table 3:

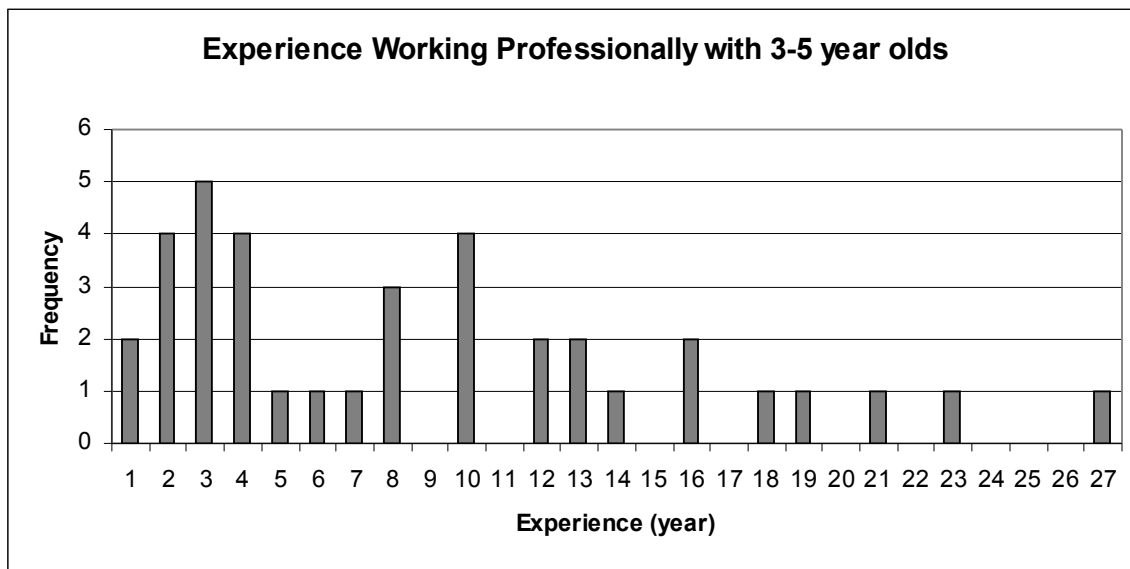
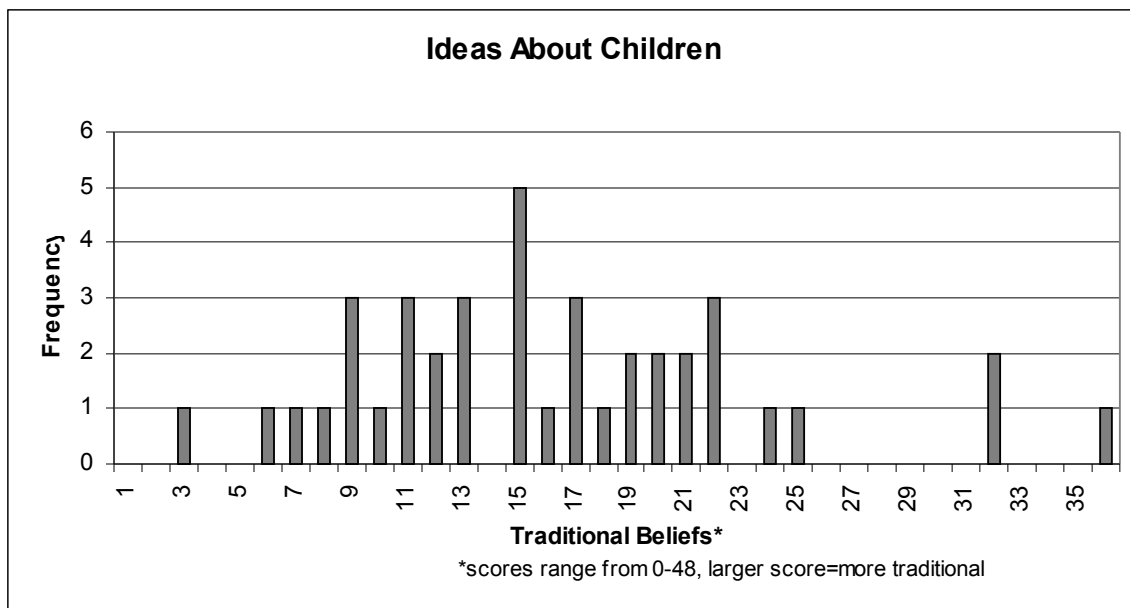


Table 4:



The degree to which teachers hold traditional beliefs shows a small correlation to the teacher's education, years of experience and age. Consistent with previous research (Schaefer, 1991), traditional beliefs have a negative correlation with educational attainment ( $r=-.223$ ), though here it is not significant ( $p=.184$ ). Traditional beliefs also show a negative, nonsignificant correlation to professional experience ( $r=-.129$ ,  $p=.448$ ), experience as a lead teacher ( $r=-.271$ ,  $p=.105$ ), and age ( $r=-.182$ ,  $p=.268$ ).

## Discussion

In this pilot sample, we found small, positive effect sizes between home order and child outcome, income, the presence of a spouse, and the mother's participation in a traditional workweek. Moreover, results indicate that the father's traditional workweek may significantly contribute to the amount of order present in preschoolers' home. However, unlike their relationship with home order, either parent's involvement in a traditional workweek shows a negative relationship to child outcome. Negative correlations also exist between teachers' level of traditional beliefs and age, experience and education. These initial findings suggest that as teachers develop, both professionally and through experience, they adopt a more progressive teaching methodology.

This first, preliminary analysis supports the need to study the multiple environments impacting childhood development. Though home order increased for children whose parents were working traditional hours, their decreased learning and cognitive score is consistent with previous findings (West, 1993; Drummond & Stipek, 2004; Yoshikawa, 1995; Clark, 2007) and stresses the importance of parental involvement to child outcome. While the effect size of the

relationship between SES and child outcome in our findings is not as strong as that found by Coley (2002), our trends do support the previous research. Surprisingly, the correlations we find between teacher's demographics and their ideas about children opposed common beliefs and research. Traditional ideas about children, aptly named for their roots in the educational system, are actually found more often in the younger, less-experienced teachers in our study, not their older counterparts. However, our research does support Schaefer's (1991) finding that higher educational attainment correlates to more progressive ideas about teaching children.

The relationships apparent in our study further emphasize the importance of structure, parental involvement, and teacher education/training in the lives of children. As more data becomes available from the larger study, researchers should analyze teacher's ideas about children in relation to child outcome within their classrooms. This relationship will prove important in determining the methodology that is most effective in the classroom, and how collaboration among teachers might impact student growth. Additionally, such data will contribute to our understanding of the interaction among factors (SES, home order, parent demographics, etc.) that moderate child development.

As a pilot study, this analysis suffers from a skewed sample that may not be representative of the population of Ohio preschools. A small sample size prevents multilevel analysis of the interactions among parents, neighborhoods, classrooms and schools. The sample size is further affected by incomplete questionnaires. However, this initial study validates the importance of the larger study and verifies that the database will work effectively. Future research has the potential to determine which factors prove most salient in predicting student outcome and which negative influences we can control or overcome.



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